Subject: OTHER SOLAR SYSTEMS
From: Philip Young
Date: 28 Jul 93 01:10:25 GMT
Organization: Data General Australia

Suppose Tau Ceti has a planet, with an orbital plane such that it
passes between the star and us. How close are we, technologically
speaking, to being able to:

1. Measure the periodic, minute variations in the star's intensity;
2. Detecting spectral changes, such as an increase in absorption lines
   caused by light passing through the atmosphere of the intervening
   planet.

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Philip R. Young
Data General Australia Pty. Ltd.

Subject: OTHER SOLAR SYSTEMS
From: Dr.DakrMatter
Date: 28 Jul 93 07:15:40 GMT
Sender: A Service Organization
Distribution: world
Organization: University of Oregon Network Services

In article Philip Young writes:

|> Suppose Tau Ceti has a planet, with an orbital plane such that it
|> passes between the star and us. How close are we, technologically
|> speaking, to being able to:
|>
|> 1. Measure the periodic, minute variations in the star's intensity;
|>
|> 2. Detecting spectral changes, such as an increase in absorption lines
|>   caused by light passing through the atmosphere of the intervening
|>   planet.

1. Porbably not possible even above the earth's atmosphere --.
measuring anything less than 0.001 mag variation can't yet be done
given typical detector read noise

2. This might actually be possible depending on the nature of the
atmosphere and its density - however one would require a very
large aperture in orbit (for good seeing) as the signal would be
weak.

Also, I have no idea if Geoff Marcy is reading any of this but if so,
perhaps he could comment since he is a leading expert on velocity
variations and limits on masses of unseen companions around
nearby stars.

Subject: OTHER SOLAR SYSTEMS
From: James Davis Nicoll
Organization: University of Western Ontario, London

Date: Wed, 28 Jul 1993 15:40:17 GMT
Sender: USENET News System

In article Brenda Kalt writes:
>
>A number of years ago Isaac Asimov did a column on this and came to the
>same conclusion. The point he did not mention, and James Nicoll does not
>mention, is the effect of the second sol's gravity. As a complete
>amateur, with no reference books handy, let me ask: if there were a
>second Sol in Saturn's orbit, where would the gravitational boundary
>between the two systems be?

I'd assume given equal mass, the point at which a body felt
equal attraction would be at about five AU.

James Nicoll
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Subject: planets in binary star systems
From: Jim Buell
Date: 28 Jul 93 18:58:09 GMT
Organization: University of Oklahoma, Engineering Computer Network
Keywords: planet, star

For a planet to stay in a binary system it has to avoid being
ejected from the system. The planet can be ejected from the system
if it "collides" with both stars at the same time ("collision"-
interacting gravity fields, not a literal collision). If such a
collision occurs it is likely to gain energy and be ejected from
the system (It could also lose energy). Such a collision is
likely if the planet exists close to the two stars, however if
the planet is far enough from both stars it will behave as if it
were orbiting a single mass equivalent to the mass of both stars.

Asteroids inside the orbits of both stars would also be unlikely
since they would also have a tendency to be ejected.

Dust in the same situation would either quickly accrete onto the
stars or be ejected for the same reasons.

Jim Buell